

**5100-323B**  
**June, 1998**  
Superseding  
5100-323A  
April, 1993

**U.S. DEPARTMENT OF AGRICULTURE  
FOREST SERVICE**

**SPECIFICATION**

**LINER, FIRE SHELTER, CARRYING CASE**

1. SCOPE

1.1 Scope. This document covers a polyethylene liner, which is used to protect the fire shelter while it is in its carrying case.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals (see 6.2).

FEDERAL SPECIFICATION

L-P-390 - Plastic, Molding and Extrusion Material, Polyethylene and Copolymers (Low, Medium and High Density)

FEDERAL STANDARD

FED-STD-376 - Preferred Metric Units for General Use by the Federal Government

(Copies of Federal specifications and standards are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

2.1.2 Government drawings. The following Government drawings form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these drawings are those in effect on the date of the invitation for bids or request for proposal.

Beneficial comments (recommendations, additions, deletions) and any pertinent data that may be used in improving this document should be addressed to: USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59804-7294 by using the Specification Comment Sheet at the end of this document or by letter.

FSC 8465

USDA FOREST SERVICE

MTDC-829 - Liner, Fire Shelter, Carrying Case

(Address requests for copies to USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59804-7294.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those in effect on the date of the invitation for bids or request for proposals.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 3951 - Standard Practice for Commercial Packaging

(Copies are available from ASTM, 1916 Race St., Philadelphia, PA 19103-1187.)

AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Copies are available from the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

1977 - Standard on Protective Clothing and Equipment for Wildland Firefighting

(Copies are available from National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Copies are available from American Trucking Association, Inc., Traffic Department, 1616 P St. NW, Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Copies are available from Uniform Freight Classification Committee, Room 1106, 222 S. Riverside Plaza, Chicago, IL 60606.)

(Non-Government standards and other publications normally are available from the organizations that prepare and distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

#### 3.2 Materials.

3.2.1 Body material. The liner shall be made from high density virgin polyethylene conforming to type I, class H, grade 1, category 4 or 5 of L-P-390. Paragraph 3.2.3 of L-P-390 shall not apply. Clean, unburned material in the form of imperfect parts, tails, neck flash, or other scrap of the same composition as the virgin material and produced in the molding or finishing operation may be reground and mixed with the virgin material. When reground is mixed with the virgin material, the reground shall not exceed a level of 35 percent by weight of the blended mixture. The finished color shall be translucent white.

3.2.2 Material shrinkage. Because the shrinkage characteristics of plastic materials, it shall be the contractor's responsibility to compensate for this factor in mold design in order to produce and supply a finished product in accordance with drawing MTDC-829.

3.3 Design and construction. Design and construction shall conform in all respects to drawing MTDC-829 and as specified in this document. In the event of conflict, this document shall prevail.

3.3.1 Liner body. The liner shall be blow molded by a process in which the liner is blown and molded in one piece and not as a result of a sheet forming operation. All parting lines shall be free from flash except that flash extending more than 1/32 inch at the bottom pinch-off area shall be permitted. The liner shall be blow molded in such a manner that the material shall be distributed to conform to the general interior and exterior shape and design as shown in drawing MTDC-829.

3.3.2 Notches. Notches shall be cut in accordance with drawing MTDC-829 and the cut edges shall be straight and smooth without burrs.

3.4 Weight. The finished weight of the liner shall be a minimum of 160 grams (see 4.4.4.1).

3.5 Thickness. The liner shall have an average thickness of  $0.063 \pm 0.016$  and a minimum thickness of 0.016 as determined by 4.4.3.1.1.

3.6 Label. The liner shall have a label with markings in accordance with NFPA 1977. The label shall be permanently and distinctly marked by a mold-in process in the size, depth, and location shown in drawing MTDC-829.

3.6.1 Government contracts. Government contracts shall add the National Stock Number (NSN 8465-01-300-1699) and the contract number to the label. This information shall appear as two separate lines, under the NFPA required heading information, and above the manufacturer's name.

3.7 Finish. The interior and exterior surfaces of the liner shall have a smooth and lusterless finish throughout; and shall be free of dirt, dust, grease and foreign matter. The finish shall be produced from a die which has cavity surfaces finished in vapor blast, water hone or similar satin finish and not by the application of any protective coating, lacquers or other materials.

3.8 Workmanship. The liner shall be clean, smooth, well finished and free from bubbles, cracks, pinholes, dirt, warpage, blisters and scratches. The liner shall conform to the quality of product established by this document. The occurrence of defects shall not exceed the applicable acceptable quality levels established herein.

3.9 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch/pound units, provided they fall within the tolerances specified using conversion tables contained in the latest revision of FED-STD-376, and all other requirements of this specification are met.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection and test requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, contractor may use his/her own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections deemed necessary to ensure supplies and services conform to prescribed requirements. The contractor is responsible for the certification of the liner by a third party Certification Organization as required by NFPA 1977. Certification Organizations shall conform to NFPA 1977. The contractor shall provide all required information to the Certification Organization.

4.1.1 Non-Government contracts. Quality assurance provisions for non-Government contracts shall be as specified herein. Where applicable, references to "Government" herein shall be replaced by "Certification Organization."

4.1.2 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.3 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.1.4 Certificate of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection. When a first article is required (see 6.2), it shall be examined for defects listed in table I and 4.4.3.1. The presence of any defect, any dimension not within specified limits, or failure of any test shall be cause for rejection of the first article.

4.4 Quality conformance inspection. Except as otherwise specified herein, sampling for inspection shall be performed in accordance with ASQC Z1.4.

4.4.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this document or applicable purchase document.

4.4.1.1 Material identification. Identification of the materials for the body may be accepted on the basis of a certificate of compliance for requirements specified in 3.2.1. A certificate of compliance shall be furnished with each lot stating that the body material does not contain more than 35 percent reground material and meets the requirements of the reground material as specified in 3.2.1.

4.4.2 In-process inspection. In-process inspection shall be conducted to confirm that the liner is of one piece blow molded construction (see 3.3.1). Whenever nonconformance is noted, correction shall be made to the items and processes affected.

4.4.3 End item inspection. The end item shall be examined for the defects listed in table I and in 4.4.3.1. The lot shall consist of all completely fabricated liners offered for inspection at one time. The sample unit shall be one completely fabricated liner. The inspection levels and the acceptable quality levels (AQLs) shall be in accordance with 4.4.3.2.

TABLE I. End item visual defects

Examine	Defect	Classification	
		Major	Minor
Quality and finish	Color not as specified	X	
	Exterior surface of body not smooth and not lusterless throughout	X	
	Bubbles		X
	Finish produced by application of coating, lacquer, or other organic material	X	
	Any cut, tear, hole, burn, break, crack or mend	X	
	Weld mark, sink mark, shrink mark, dulling of surface, roughness, or abrasion		X
	Discoloration, surface deterioration, foreign inclusion, grease, orange peel, pit, rough finish or other imperfection	X	

(cont)

TABLE I. End item visual defects (continued)

Examine	Defect	Classification	
		Major	Minor
Design and construction	Varies from specified design and construction	X	
	Not fully formed		X
Workmanship and assembly (general)	Evidence body is not formed by one piece blow molded process	X	
	Evidence of poor or inadequate mold fill	X	
	Any gate not trimmed flush with the molded surface		X
	Component missing or operation not as specified	X	
	Interior of opening not smooth i.e., surface shredded, chipped, scratched, abraded or otherwise impaired	X	
	Liner distorted resulting in weak spot at parting line	X	
	Flash at bottom pinch-off area on parting line extending more than 1/32 inch		X
	Flash appearing on other parting lines		X
Cleanliness	Dirt, grease, dust or other foreign matter on inside or outside of liner	X	
	Plastic shavings on the inside of liner		X
Identification marking	Omitted, incorrect, illegible, or size of characters not as specified	X	
	Not in specified location	X	
	Wording or marking other than specified	X	

4.4.3.1 Dimensional examination. The liners shall be examined for defects in wall thickness as specified in 4.4.3.1.1 and for other dimensional defects as specified in 4.4.3.1.2. Sample unit for each examination shall be one liner.

4.4.3.1.1 Examination for wall thickness. To test for wall thickness, make four vertical cuts from top to bottom in the corners separating the four vertical planes of the liner. Four thickness measurements shall be taken along both edges of the two larger planes at 1, 3, 5, and 7 inches below the top of the liner. The 16 measurements shall be used to determine average wall thickness. Minimum wall thickness shall be measured at the four bottom corners where four vertical planes join the horizontal plane of the liner. A failure of any sample unit to meet the requirements shall be scored as a defect.

4.4.3.1.2 Examination for dimensions other than wall thickness. For this examination, all liner dimensions other than wall thickness shall be measured. Any dimension that is not within the specified tolerances shall be classified a defect.

4.4.3.2 Inspection levels and AQLs. The inspection levels and AQLs expressed in defects per hundred units shall be as follows:

Paragraph	Inspection level	Major AQL	Total AQL
4.4.3 (table I)		4.0	10.0
4.4.3.1.1	S-3	(one class)	1.0
4.4.3.1.2	S-2	(one class)	6.5

4.4.4 End item testing. Testing shall be for completely fabricated liners. The sample unit shall be one completely fabricated liner. The sample size for the designated lot size shall be as shown below. There shall be no evidence of failure of any sample unit to meet the requirements as specified.

<u>Lot size</u>	<u>Sample size</u>
800 or less	5
801 to 22,000	7
22,001 and over	12

4.4.4.1 Weight Test. The liners shall be weighed to the nearest tenth of a gram. Any liner weighing less than the minimum specified in 3.4 shall constitute a failure.

4.4.5 Packaging inspection. An examination shall be made to determine that packing and marking comply with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully packaged except that it shall not be palletized and it need not be closed. Shipping containers fully packaged that have not been palletized shall be examined for defects in closure. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 defects per hundred units.

<u>Examine</u>	<u>Defect</u>
Markings	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing or not as specified. Any component damaged, affecting serviceability.
Workmanship	Inadequate application of components, such as: incomplete closure of container flaps, improper taping, loose strapping, inadequate stapling. Bulged or distorted container.
Contents	Number of liners per container is more or less than required.

## 5. PACKAGING

5.1 Preservation. Preservation shall be in accordance with ASTM D 3951 and as specified in the contract or purchase order and herein.

5.2 Packing. Fifty liners preserved as specified in 5.1 shall be packed in a close-fitting corrugated fiberboard box, minimum burst strength 200 psi and shall be in compliance with the Uniform Freight Classification and the National Motor Freight Classification.

5.2 Marking. In addition to any special marking required by this specification, marking shall be in accordance with the contract or purchase order.

## 6. NOTES

6.1 Intended use. The liner is designed to be inserted into fire shelter carrying cases to prolong fire shelter field life.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. When first articles are not required (see 3.1, 4.3, and 6.3).
- c. Preservation, packing, and marking required in addition to specification requirements (see section 5).

6.3 First article.

6.3.1 Government contracts. When first articles are required, they shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article shall consist of four completed liners covered under this specification, and they shall be preproduction samples. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions in all acquisition instruments regarding arrangements for selection, inspection, and approval of first articles.

6.3.2 Non-Government contracts. When first article samples are required, they shall be inspected and approved by the Certification Organization. The first article shall consist of four completed liners covered under this specification, and they shall be preproduction samples. The Certification Organization should include specific instructions regarding arrangements for selection, inspection, and approval of the first article.

6.4 Notice. When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever.

6.5 Preparing activity. USDA Forest Service, Missoula Technology and Development Center, Building 1, Fort Missoula, Missoula, MT 59804-7294.



# Standardization Document Improvement Proposal

This form is provided to solicit beneficial comments that may improve this document and enhance its use. Contractors, government activities, manufacturers, vendors, and users are invited to submit comments to:

USDA Forest Service  
Missoula Technology and Development Center  
Building 1, Fort Missoula  
Missoula, MT 59804-7294

Attach any additional pertinent information that may be of use in improving this document to this form and mail in an envelope. A response will be provided when the submitter includes their name and address.

NOTE: This form shall not be used to submit requests for waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the document, or to amend contractual requirements.

Document Identification: **5100-323B - LINER, FIRE SHELTER, CARRYING CASE**

Submitter's Name (Optional. Please print or type): \_\_\_\_\_ Submitter's Organization and Address: \_\_\_\_\_

\_\_\_\_\_

Vendor    User    Manufacturer   \_\_\_\_\_

Phone Number: \_\_\_\_\_

Date: \_\_\_\_\_

Has any part of the Document created problems or required interpretation in procurement use?

Is any part of the Document too rigid, restrictive, loose, or ambiguous? Please explain below:

Give paragraph number and wording: \_\_\_\_\_

\_\_\_\_\_

Recommended change(s): \_\_\_\_\_

\_\_\_\_\_

Reason for recommended change(s): \_\_\_\_\_

\_\_\_\_\_

Remarks:

\_\_\_\_\_

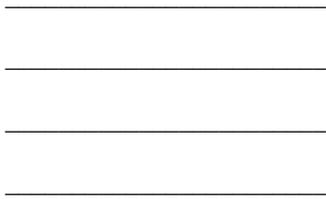
\_\_\_\_\_

\_\_\_\_\_

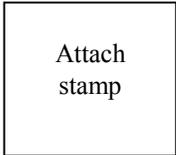
\_\_\_\_\_

\_\_\_\_\_

Fold



Attach  
stamp



USDA Forest Service  
Missoula Technology and Development Center  
Building 1, Fort Missoula  
Missoula, MT 59804-7924

Fold and staple for mailing

